

# SOFTWARE ENGINEERING

<http://www.se.rit.edu>

## PROGRAM OVERVIEW FOR EMPLOYERS

In the fall of 1996, RIT became the first U.S. University to offer a Bachelor of Science degree in Software Engineering. Software Engineering involves a teamwork approach to developing, maintaining and enhancing complex, critical software systems. The program was created in response to commercial, industrial and government organizations, which in recent years have expressed the need for graduates whose professional focus is on software development. The program prepares students for technical and management careers in a variety of computer and software-intensive industries. While the program resides in the B. Thomas Golisano College of Computing and Information Sciences, software engineering majors have access to a variety of minors including engineering, business, and liberal arts. Students majoring in Software Engineering take 14 software engineering courses along with computer science, engineering, mathematics, arts and humanities courses.

### Degree(s) Awarded

Bachelor of Science

### Enrollment

Approximately 350 students

### Cooperative Education Component

Students are required to complete at least four 10-week co-op work assignments, and are available to work 3 or 6 months at a time. Co-op positions must incorporate various phases of the Software Development Life Cycle (for example, requirements gathering and analysis, design, development, documentation, and/or testing), and include duties beyond just programming.

### Salary Information (Avg/Range)

Co-op:	\$18.68	\$7.50- \$38.46
BS:	\$65,000	\$47,000- \$100,000

### Equipment & Facilities

In addition to specialized departmental facilities, students have access to general campus-wide computing facilities, as well as the laboratories supporting both computer science and computer engineering. Campus-wide computing resources include numerous labs equipped with Windows and Macintosh platforms, computing clusters, and library resources.

### Accreditation

The curriculum meets the software engineering program criteria of the Accreditation Board for Engineering and Technology (ABET) and graduated the first students from an ABET accredited software engineering program in 2001.

### Student Skills & Capabilities

Students learn principles, methods and techniques for the construction of complex and evolving software systems. The software engineering program encompasses both technical issues affecting software architecture, designs and implementation, as well as process issues that address project management, planning, quality assurance and product maintenance. The software engineering coursework maintains a balance between engineering design and software process in both required and elective courses. As with other engineering fields, mathematics and natural science fundamentals are taken in the early years. Students also must satisfy the program's ethics and economics requirements. A three-course sequence in a domain outside the program's core requirements allows students to apply their software engineering skills to a variety of fields including science, computing, engineering, and business. Finally, students complete a two-course senior project as the final demonstration of their abilities and preparation for immediate employment and long-term professional growth in software development organizations.

# Software Engineering

## Course Sequence BS degree

### First and Second Years:

Problem-Based Introduction to Computer Science  
Data Structures for Problem Solving  
Object-Oriented Programming  
Introduction to Computer Science Theory  
Engineering Statistics  
Software Engineering Freshman Seminar  
Introduction to Software Engineering  
Personal Software Engineering  
Engineering of Software Subsystems  
Engineering Fundamentals of Computer Systems  
Calculus I-III  
Science Sequence (2 courses)  
University Physics I  
Discrete Mathematics I-II  
Professional Communications  
Liberal Arts

### \*Software Engineering Electives

#### Design

Distributed Software Systems  
Information Systems Design  
Real-Time and Embedded Systems  
Modeling of Real-Time Systems  
Performance Engineering of Real-Time and Embedded Systems

### Third, Fourth and Fifth Years:

Principles of Software Architecture  
Formal Methods of Specification & Design  
Concurrent Software Systems  
Software Process and Project Management  
Software Requirements Engineering  
Software Engineering Senior Project I-II  
Software Engineering Electives (3 courses)\*  
Engineering Methods for Software Usability  
Application Domain Electives (3 courses)\*\*  
Engineering Electives (3 courses)  
Free Electives (3 courses)  
Liberal Arts

#### Process

Software Testing  
Agile Software Development  
Software Process and Product Quality

Students take at least 3 software engineering electives; 1 must be a design elective and one a process elective.

### \*\* Application Domain Electives

Students select an application domain that consists of three courses in one of the following areas:

Artificial Intelligence	Computer Security	Public Policy
Bioinformatics	Economics	Scientific & Engineering Computing
Business Applications	Entrepreneurship	Statistics
Computational Mathematics	Industrial & Systems Engineering	Usability
Computer Engineering	Interactive Entertainment	

### Selected Employers of Software Engineering Co-op and Graduating Students:

Activision, Amazon, Apple Inc., BAE Systems, Blackbaud, Digital Receiver Technology Inc., EnerNOC Inc., Fidelity Investments, Goldman Sachs, Goodrich, Google, Harris Corporation, IBM Corp., JP Morgan Chase, L-3 Communications, Lockheed Martin, Microsoft Corporation, Minitab Inc., Mitre Corp., MOOG Inc., Northrop Grumman, Oracle, Paychex, Rochester Software Associates, Siteworx Inc., Thomson Reuters, Webster Financial Corp., Welch Allyn Inc., Xerox Corporation, ZOS Communications

### Contact Us:

We appreciate your interest in RIT co-op, graduating students or alumni. We will make every effort to make your recruiting endeavor a success. Feel free to contact Kara Leonard and Lisa Monette, the program coordinators who work with the Software Engineering program. For your convenience, you can access information and services through our web site at <http://www.rit.edu/recruit>.

**Kara Leonard, Lisa Monette, Program Coordinators, [kmloce@rit.edu](mailto:kmloce@rit.edu), [lamoce@rit.edu](mailto:lamoce@rit.edu)**

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